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ORDINARY MEETING, JUNE 18, 1866.

THE REV. WALTER MITCHELL, VICE-PRESIDENT, IN THE CHAIR.

The minutes of the previous meeting were read and confirmed.

The following Paper was then read by MONTAGU BURNETT, Esq., M.A., in the absence of his father :—

ON THE DIFFERENCE BETWEEN THE SCOPE OF SCIENCE AND THAT OF REVELATION AS STANDARDS OF TRUTH. *By* CHARLES MOUNTFORD BURNETT, ESQ., M.D., *Vice-President.*

NOTHING would appear to be more reasonable or more just than that the natural mind of man, that mind which was made to contemplate every visible object we behold around us, should be adapted and fitted for that purpose with the highest degree of accuracy; so that precision and perfection should be in its ultimate sense the end to be obtained.

We have, accordingly, provided for this purpose, both external and internal organs of sense, which, when applied to the objects around, cannot fail to convince us, that they have been furnished with a view to ascertaining the more intricate nature, or the more obscure characters of those objects; by which we have put into our possession an instrument that conveys to us with assurance doubly sure, that we cannot be mistaken when they undertake to inform us on such matters. So that while our outward senses are engaged to put before us within a prescribed range all that really comprises the outward world, we are enabled with our inward faculties to compare, to reason upon, and to bring to bear the order and the regularity, as well as the beauty and perfection of that work which is set in our midst, apparently for the express purpose of our guidance and contemplation.

The more we ponder upon this magnificent work, the more we become impressed with the sublimity and grandeur of its design; so that before we ascend to those surer and higher

tests which are to convince us still more assuredly that a profound design, an unvarying precision, marks the movements with which this globe performs its daily evolutions; the more certain are we, that one great Artificer made it what it is, and stamped it with laws which cause every part to be dependent on the rest; and thus we have a proof that one Mind and one Will gave it a real existence.

But could this Being have determined that any other result but truth should issue from the contemplation of such a work? Could any uncertainty be made to proceed out of a work which, on every side, bespeaks not merely magnificence and beauty, but regularity and order.

Surely we could not decide, with the reasoning powers we possess, that this fair and beauteous work was made to mislead and misinform man, *that one* of all the denizens of the earth who alone is able to be convinced that a perfect God made the heavens and the earth, and all things therein, with a marvellous wisdom.

Can we then be surprised that man should believe that he beholds in this work the finger of an unerring and perfect God, and that it should be set for his natural belief in the greatness and unchangeableness of that God?

Can we be surprised that with such faculties as enable him to do it, man should have power to link together the worlds that float in the heavens around him, or to discover the laws by which those worlds are moved, or to note the revolutions which they were made to observe?

Can we be surprised that as man's knowledge of one law was succeeded by that of another, and that as his apprehension of those laws became more certain, more cumulative in character, that he became less disposed to give them up as a standard of truth, as a foundation on which to erect a chronicle of time and of events, to which he could look backwards or forwards with security and confidence? And before we take upon ourselves the authority of answering these questions, we must state at once, that with regard to the work in question, there cannot be any doubt abstractedly of the correctness and invariableness of this standard. It is not, therefore, on the side of the standard of Truth itself, that there is any shortcoming in its ability to furnish it, but the imperfection is on the side of man. Fallen from his original perfection, he fails to bear morally that relation to the natural creation which he did before the fall, and therefore his impaired faculties have failed to justify his reliance upon them as a standard of Truth.

We have not only the experience of ages to prove this, but

it is confirmed by Revelation, another standard of Truth given to man after his fall, by the same Being who established the first standard, after man was in a state which shut out from him the possibility of his reaching all the knowledge necessary for his eternal salvation.

Every believer knows that "the world by nature knew not God," and that we cannot by this means find Him out to perfection.

"Canst thou by searching find out God? Canst thou find out the Almighty to perfection? It is high as heaven, what canst thou do? deeper than hell, what canst thou know?" Yet that man in his natural state had every inducement to believe that by the light of nature, when unassisted by any other standard of truth, by which he was to arrive at a higher fuller meaning of the word, I must deny.

If in this belief he was otherwise to be instructed, if he was to learn that up to a certain point only his conclusions might be right, and that wisdom, order, and unchangeableness were in this direction to be the only evidences which natural philosophy would afford him in finding out the ways of God; it is no discredit to him that he had overrated this standard as an evidence of truth, and had given it a power of unfolding more definite and important truths which it really had no means of accomplishing. This fact has never been placed before the mind of the natural philosopher in its true light, but too often opprobrium and contempt have taken the place of that reasoning which it was in the power of their opponents to use with so much success. If the natural philosopher were ever to be convinced that he had at this point taken a devious path, it would have to be accomplished only through a well-considered and well-conducted argument, too sound to be refuted, and too unmistakeable to need any mixture of ridicule or abuse. For if we know our adversary is in error, this calls the more strongly on our part for forbearance and patience, but above all for circumspection, lest in our zeal to correct others, upon so difficult a question, where faith plays so important a part, we display a mind and a temper which badly recommend the truth, and are totally at variance with that far higher knowledge which we profess to believe in, but which, by our want of charity, we have failed to recommend to others.

But now, for the sake of argument, I will ask you hypothetically to believe, that no other knowledge but that which we derive from nature, has been placed within our reach; and that man has been provided with no other source whence to discover the truth of his real destiny. Let us, for the sake of preserving the hypothesis, suppose him to proceed to investi-

gate all that he can see around him in the earth and in the heavens. Feeling sure that truth can only be arrived at through this one channel, he spares no research, and is neglectful of no means likely to make his conclusions certain, and his inferences not to be disputed. He weighs these things in the balance of induction, and he tests them there, by their conformity to those laws which he has now discovered to be unchangeable. He penetrates the *crust* of the earth, and the very first object that presents itself to his mind, is one that, while it confirms the conjectures which he has already arrived at, by seeing that both man and animals are subject to death, presents also a difficulty which he is unable to explain by any law within his reach; for the difficulty is opposed to the careful and regular computation of time. He finds, for example, that not only whole genera and species of the living creation have been entombed in the earth, but that genera and species, not now forming any part of the living creation, have also been buried there. And from the space and order and other characteristics which these remains exhibit there, he gathers that the living creation was not the first creation, but only one of a series which have followed each other in succession during countless ages of the world. He discovers, further, that these acts of creative power were manifested by slow and varied degrees, so that they took many thousands of years for their completion. Further, he discovers that man was created at a comparatively recent period of the earth, only parallel with those animals we now see alive upon its surface. And the truth of all these deductions rests alone upon the position of these remains in a certain relation to others, and in such order, that the inference cannot otherwise be drawn, than that they occupied in time a regular and independent place in the order and sequence of creation. That is, he recognizes several distinct creations, which had no more connection with the one that went before, than what was to be implied in the supposed fitness of each for a condition of things then existing on the earth, which had not previously existed.

That these difficulties, unfolded by the investigation of the earth, as the natural philosopher explored her interior for the discovery of truth, ought to have led him to conclusions so vast and so important, with greater caution, can only fairly be admitted. They should have led him to examine the grounds on which he sought to establish so wide and so high a standard of truth, upon a basis so limited and unsustained. Whereas, a fair amount of reasoning should have satisfied the natural philosopher, who joined in this hyphothesis, that no such inference could justly be drawn; that because a large portion

of the animal creation, found buried in the earth had become extinct, therefore that portion had preceded the present creation, as a separate and consecutive act of the Creator.

The legitimate inference to be drawn from these facts by natural philosophy alone, as an unquestionable evidence of truth, was simply this; viz., that from some cause not capable of being found out by this channel, death had at some time been introduced into the world.

But the knowledge of natural philosophy had previously carried human investigation further than this, in the examination of the laws that govern the heavenly bodies, though no attempt was made to show natural philosophers, by this means, that they were able to satisfy their minds of more than of the existence of a God, and of the wisdom and power He had displayed.

So much, therefore, of the truth they had attained, and so far their views were opposed to none who call themselves true philosophers. So far, we presume, no one desires to subtract from Natural Philosophy, that which she has so patiently and triumphantly earned, by the most painstaking and diligent perseverance. For she has rolled away a great stone from that aperture whence light came to us in the darker ages of the world; and if she could have increased that light by means within her reach, she would have done so heartily and earnestly. It should ever then be remembered that it was not her wilful fault that she could not do more, but her very pardonable error, that she attempted to do too much. But after Newton's death, naturalists began to claim for natural science in general more than she was able to tell us. As a great naturalist said, "We admire the power by which the human mind has measured the motions of the celestial bodies, which nature seemed for ever to have concealed from our view. Genius and science have burst the limits of space, and observations explained by just reasoning have unveiled the mechanism of the world."* Here the wise philosopher should have stopped; and even in this position greater humility would have become him better. Truly it was a great achievement to be able, thus far, to advance in the confirmation of truth, though a more perfect knowledge even in this direction has proved, that the unveiling of the mechanism of the heavens to man in his present state was not incompatible with calculations which assure us, that though there was no doubt of the invariableness of that Being who made them, yet there was a doubt of those who reduced that invariableness to figures.

* Cuvier's *Theory of the Earth*, translated by Professor Jamieson.

When, therefore, this great philosopher went on to say, "Would it not also be glorious for man to burst the limits of time, and, by means of observations, to ascertain the history of this world, and the succession of events which preceded the birth of the human race?" then I could no longer follow him, though he were a great philosopher; being assured that while the fact of many events in the history of the earth may be proved by the investigation of its structure, and many of the laws by which its movements are governed, though not explained with the most undeviating accuracy, may nevertheless prove sufficiently correct to convince us that they are in themselves invariable; yet when past or future time came to be judged of by this method of induction, and we proceed to dogmatize upon our power to compute it, through the agency of rocks or bones, or other things unfolded to us by exploring the interior of the earth, we can then no longer trace any connection between the things stated and the supposed proofs which were adduced to show that the right conclusion was in this way to be inferred.

We can judge of time imperfectly by the laws of induction. Time stands in relation to geological events very much in the same position as death. When it is used to explain causes that are not reducible to those laws, it is simply impossible. Even when we judge of time nearer to us, there is a difficulty in computing it, if it do not come within the range of those laws; if, for instance, we judge of the operation of time, as we judge of it surrounded by light and air, or by things not surrounded by these elements. Some time ago, the cities Herculaneum and Pompeii were discovered. They had been more than 2,000 years, as it were, hermetically sealed from these agencies. What was the consequence? The oil was found *still* in the lamp, the wine still in the bottle, the colours were preserved on the walls, and no change had passed over the most delicate substances, though all this time had elapsed since they took up that position in which they were to be preserved unchanged through so long a lapse of time. To use the language of a classical writer, we may say here, "Time has had its wings petrified in the midst of its flight."

But to take an instance from some geological example. Take a common rounded flint from the sea-shore. We behold it, even and water-worn; we observe it so hard, almost incapable of being scratched by the sharpest instrument, that an immense period of time must have elapsed to produce any effect upon so hard a surface, by the common friction it is exposed to at the present time. Probably it would take many thousand years to produce such an effect as that before

us, yet who can say it was not produced in five minutes of our time without a miracle. If the stone was worn before it was hardened, it certainly could be done in five minutes, and what is there to show that the hardness preceded or followed the friction?

So that when we seek to deduce conclusions which we think are borne out in the same direction, without calculating the changed differences of the two cases, we not only exceed the limits of truth, to which inductive philosophy is entitled to bear them, but we place ourselves at once in a formidable attitude with respect to an entirely different source of truth, from which was to be drawn, nothing that natural philosophy had not advanced up to a certain point. For each source had equally affirmed the existence of one God, and that that God was infinite in power, and unchangeable in purpose. But here, it would have been well if Natural Philosophy had paused. The standard of truth to which we now appeal, confirmed, as we have said before, all that Natural Philosophy had asserted up to a *given point*, beyond which she was unable to give any right inferences or deductions. This higher and more detailed standard of truth was Revelation.

But, as some would say, what is Revelation that we should believe her statements before the evidence of our senses? Here we must answer, that Revelation is a message expressly sent from God to man for his direction and instruction in those things which closely concern his eternal destiny, and which he could not have known in any other way. This is a very vital point, requiring to be kept steadily in the mind, especially in these times; for if there were any way besides Revelation that could have informed us that death had been brought into the world by sin, then we should have had more reason to believe that Revelation was unnecessary. But Revelation was no other than the Spirit of God speaking through men of every rank of life, and its claims to our belief rested on many infallible proofs. Thus, it was quoted on many occasions by the Saviour of the world whom it first made known to man. It made assertions which most accurately came to pass as it had said; and, moreover, it challenged the whole world to disprove a single statement that it made. But besides this, it made another claim upon our belief still more remarkable; for it made statements which were contrary to our natural belief, so astonishing, that if some of the most remarkable had not already come to pass, we might have disbelieved them altogether.

But, in order that we might not do so, we should notice with attention the course she has pursued. She had at this point

to take up a chain which natural philosophy was unable to link together or to find; in other words, to make statements which could not even be guessed at, or carried out by natural philosophy alone; as there was no necessary induction that could certainly follow the announcement of the facts which natural philosophy thought she was able to make. Let me make this clearer by example: the fact that death was to be announced from the earliest period to which geology really could point, showed this truth; viz., that while Revelation would not contradict natural philosophy as far as the *certainty* of this fact went, that death had come into the world; at this point she takes it upon herself, if we may so say she takes it out of the hands of induction, *i. e.* out of the hands of geology, and at once proceeds to give the reason *why* death came into the world,—viz., as the consequence of sin; and *when* it came into the world,—viz., as the consequence of *Adam's* sin.

Natural philosophers here, very unwisely, advanced beyond the confines of that science which they undertook to unfold. They told us that it was in order that other creatures might take the place of those that had died, that death was brought into the world.

But if this was the truth, then it must be seen by all, that Revelation and Natural Science are *not* agreed upon this point; and which of the two standards of truth has most claim on our belief, no one, I think, can doubt, after what has been said. It must be clear to any one, that the connection between the *fact of death* and *its true cause* was not likely to be found buried in the strata of the earth; and though it is not necessary to enter here into all the important circumstances that render it essential to his eternal safety that man should know that the sin of Adam was the cause of death; yet we may say here, that it was the peculiar feature of the truths conveyed through Revelation that they were not written in the Book of Nature. The Book of Nature confirmed the fact, and there stopped; the Book of Revelation went on to explain the cause of that fact.

The position, therefore, that Revelation took up was, to say the least, a very remarkable one, for it not only confirmed what natural philosophy had discovered, as far as the simple facts were concerned, but it proceeded to unfold in detail the particulars of a wide scheme of divine purpose, which was to influence and regulate the future history of the world, though all that it stated on this point was before unknown. The veracity of what was advanced, claimed our highest attention, and commanded at once our respect and belief. And here I must mention a circumstance which, to me, is

as unaccountable as any of the difficulties which natural philosophy has to contend with, in undertaking to unfold a system of truth which is to apply accurately to the most minute events, past, present, and future, connected with the destiny of this world. If this Revelation had been the mere invention of man, if its natural evidence were dead against the probability of its truth, how do we get over this difficulty, that it holds to this day higher grounds than any other evidence we can advance; and in this position, what folly is it to suppose that it does so by putting forth a reasoning that is not even parallel with, but below, the reasoning of man? And what makes the position of this reasoning so conflicting is, when we ask where was the necessity of God's revealing to man that which was already to be found in the evidences of the natural world? We oblige ourselves to believe, when we take up such a position, that He who offers himself as our Divine instructor, is capable of committing an act of supererogation, that at once places Him below His reasoning creatures. If there were nothing more to tell us than we might naturally discern with the aid of those faculties we already possess, for the investigation of the physical world around us, where was the need of a higher and supernatural method of conveying those truths to our minds, which Revelation alone undertook to make known to us?

This argument forces us to respect the authority of Revelation without cavil. But I said that it staked its veracity upon grounds which one falsehood would have been sufficient to overthrow. It had asserted that not one statement should fail of all that it had advanced. This was, indeed, a bold assertion, if it was not to come from a standard of truth higher than natural philosophy. But the marvel still increases. It proceeded at once to break new ground, to ride over, as it were, the prejudices and assertions of all who pioneered in the path of truth. For it at once showed that geology had not the most distant conception of the *cause of death*, and without foundation had stated what was not the truth.

If we are attentive to compare the statement of Revelation, as to the case of the six days' creation offered there for our belief, we shall at once be struck with the unique and wonderful explanation which is there given of it without reserve.

And if we place this alongside of the statement offered by geologists, we must indeed be astonished at the inexplicable difficulty, the irreconcileable assertions which we here meet with. Thus, while the one makes no hesitation, no explanation, in affirming, what perhaps was the least likely thing ever to enter the mind, viz., that in six natural days of

twenty-four hours, the Lord made this earth, and all that in it is; the natural philosopher asserts that the world was not made for many thousand years.

So that, while both authorities are able to confirm one another in the great fact that all things were created with the knowledge and power of an infinite God, both were not capable of giving a minute explanation of the *manner* and the *time* in which this event was completed.

And there was ample reason to show why inductive philosophy was unable to furnish this more detailed explanation, and why nothing less than divine inspiration could do so.

The creation having at first been made perfect, it was, after a certain period, to become so far interrupted, as that a large portion of the then living part should be destroyed by water. This was a catastrophe not reasonably to be inferred or expected. There was nothing in the chain of perfect creation to lead to or to link this event with anything that had gone before, without the aid of Revelation to guide us. It formed no part, it was not in fulfilment, of any of those laws which had been attached to creation at the time it was originally formed. It was even brought about by means that were not only independent of those laws, but that actually defied them. As if to show us that, as creation was first brought into existence before those laws were made which were destined to regulate it, so here, by the same Power, the earth could be destroyed without making any appeal to those laws which were given to it for its continuance.

As, in the first instance, all things were made by *miraculous* and *supernatural* power, before those laws were brought into action which were to guide them, so, when the time came that the creatures were to be destroyed which were upon its surface, their destruction was effected by *supernatural* means; and, as such, they could furnish no more evidence as found in the earth, how or when the Deluge occurred, than they could tell us *how* the earth was formed in six days.

There was nothing in the bowels of the earth to satisfy man of the reason of this catastrophe, and without Revelation we should be ignorant of its causes at this time, though we might see and adduce abundant evidences of the fact having taken place.

It was not necessary to show that that act of creative power, which marked the operations of the Divine hand in the six days' creation, was an operation so strictly limited that man could not contemplate God in the capacity of a natural Creator subsequent to those six days.

But, as we limit these higher truths to the light of Revela-

tion alone, it becomes us to be very careful how we make that Revelation say what, perhaps, it did not say. This is a difficulty with which the Biblical student will often have to deal, and if he is just, he will give to the natural philosopher all the advantage to which he is entitled, when we oblige him to receive authority so high, and so unique, injured and misinterpreted as it is, or at any rate not rendered clear, and without doubt, in many passages that are now even obscure in the present day. A great responsibility rests on those that have made the word of God say what it does not say. For instance, it is all-important, if we want to conduct this argument with due justice to both sides, that we decide, more correctly than has hitherto been done, what was really comprehended in the six days of the living creation mentioned in Genesis; and that obliges us to say, that neither the original Hebrew in Genesis, nor natural philosophy compels us to understand that every creature we *now* find on the earth had its exact counterpart in that six days' creation.

But I have made an assertion which I can hardly expect those who have not been able yet to believe it, will receive without some further proof. Indeed there would be no necessity that I should occupy your time in this place and upon this occasion, if my arguments were *exclusively* to be drawn from the proofs of the supernatural source from which Revelation derives her authority. It would be unreasonable to expect this; and charity alone, which makes allowance for all those who differ from ourselves, obliges me to give a reason for what I state, in language which is nearer to the arguments taken up by those who differ from myself. It is only fair, therefore, that I draw my argument from geological sources. Thus, geologists are very confident in their assertion that more than one independent creation has passed out of the hands of the Creator. They are persuaded that they see marks in the fossils that have been entombed in the earth, distinct enough in their character to justify them in drawing the inference that they were separate and independent acts of creation—separate as regards time and general external appearance; and I wish it to be noticed that it is not a consequence that, because great stress is thrown upon the expression "very good," as applied by God himself to that creation in Genesis mentioned in the six days, therefore all the animals that we see *now alive* necessarily constituted part of that creation.

The term "very good" cannot be a term taken in the abstract, but must necessarily form a proper relation to the time and circumstances of that creation to which it applied. In this sense, that creation which was so described by its

Creator (by one who is Himself perfect), could have no fault, or disjointed appearance, palpable to fallen man. But it is not therefore a consequence that God might not have created animals *at a subsequent period*, such, *e. g.*, as after the Deluge, which then would form a better and closer relationship to the changed circumstances that had just taken place. The point here most to be attended to is, that no living creation *preceded* the one in question. The error of geologists has been the mixing up of the cause of the destruction of the present creation, mentioned in Revelation, with other causes which they suppose preceded it. They erroneously assume that death preceded the creation in Genesis; and therefore they deny that all the ravages caused by death could have proceeded from the one deluge mentioned in Genesis. But there is more difficulty here in believing that all the evidences of destruction of life which we discover buried in the earth proceeded from different and successive causes, than there is in believing and proving that death proceeded from one cause, as stated in Genesis.

If we proceed to investigate and to compare the remains of fossil animals of all kinds that have ever been exhumed from the earth, we shall find that there is no exception to this rule: that independently of the marks of design which identify them as the work of the same God, there are other marks upon them which show that they filled up places that must otherwise have been vacant in that creation which was pronounced by God to be "very good."

And as we know that many parts of that creation have become extinct, that some hundreds of its higher species, and four-fifths of its lower species have disappeared (for though these may not be all extinct, yet we have never seen them alive, and only some of them in a fossil state), we are sure there must be found in the earth many animals, the representatives of which are not now seen amongst the living parts; yet amongst none of them could it be said from their appearance that they had no connection, and were totally isolated from the living creations supposed to precede the one mentioned in Genesis. Everything that has been discovered in the earth, only serves to make more perfect that living creation which, as far as we know of its disjointed character, occupies the earth at the present time.

It is in this way that we are indebted to geology for instructing us more minutely as to what the creation must have been at the time when it received the title of "very good," when it came forth from the hands of the Creator. And but for the discoveries of geology, we should have had a less

detailed idea of the extent of the disruption which has taken place in that creation which we now behold. For the most delicate and perishable organizations—particularly in the lower species—have been preserved so beautifully and wonderfully, that we could not have known of their existence at all, but for the care which has been taken of them in the bowels of the earth.

Yet with all that the earth can disclose, and calculating every known species or individual that has ever been discovered, there are still many difficulties to be explained and many links to be repaired, from those animals that have been entombed, before we can presume to say that we have in our possession, before our eyes, that *one* creation which drew forth from its Creator those memorable words, "And God saw everything that He had made, and behold it was very good." If we go into the most extensive collection of recent and fossil remains of animals, if we study the national museums in this department of history, we must see directly that all our power to reach anything like perfection in this direction has failed; that often the chain, or the circle, has been lost, and we cannot trace it.

The very infirmity of our mode of grouping the animal creation together, shows the failure which must attend the effort of any finite being to study to perfection the work of an Infinite God. But the great difficulty we have of arriving at the truth of what constitutes the *living* creation, is not confined to the impossibility of determining all the genera and species which have become extinct. Another difficulty arises from our inability to form a true classification, even of what is before us. If we attempt to make a chain, we cannot do so without losing the most correct idea we can possibly have of the living creation. That Being who made that creation is Eternal. He has neither beginning nor end. This idea much better expresses the living natural creation by a circle, having neither beginning nor end, in which you can take no part or individual of that circle, and say one part was higher than the other.

This is just the course which the Eternal Being has pursued in the living creation; He has made that creation up of an infinite variety of circles, some larger, some smaller. In this way we see animals linked together, not as it were by a long pendent chain, but by a circle; so that in many particulars which characterize the individual, the more prominent parts of an animal are linked by a resemblance, more or less close, to some others. But nomenclators have, in many instances, strung animals together by a single link, which of course gives

but one character by which they may be distinguished, and consequently we must see how impossible it will be to complete the circle of which such animals formed a part.

We have said that there is the greatest reason to infer and to believe, that no creation, in which was the breath of life, took place before the six days mentioned in Genesis. And we ground this belief on the assertion of Revelation that by man sin, and consequently death, came into the world. Inductive science says, No—death was in the world before man sinned, because death was in the world before man was created. Which of these assertions is true? and which is most to be believed?

The assertion of inductive science *claims* to be believed on the ground of proof by natural investigation; whereas Revelation does not even attempt to show that there is any *inductive* proof that man's sin was the cause of death. Her assertion upon this point, is without explanation of any cause of this kind whatever. We are therefore driven to inquire, whether the inductive method will bear out the natural philosopher; viz., whether there is any connection between the *event* of the Deluge, which they admit, and the *cause*, which they state as capable of proof from *induction*.

This is the point mainly at issue; and as it is entirely different from Revelation, it becomes natural philosophy, in the first place, to prove that she can, by induction, show that death was in the world before man sinned.

Bearing this in mind, that if natural philosophy could show by ocular and inductive proof, that death was an event which took place before the six days of Genesis, we should still doubt it; not merely because it was not true, but because Revelation had said differently, and that upon grounds that I have shown cannot possibly be disproved, but which bear, nevertheless, no relation by induction.

Now, therefore, it is my place to show that it is impossible by the inductive method to prove the *cause* why death came into the world. I must prove this before I can expect those who say that they can adduce such evidence, to alter their mind, and admit it is possible they were wrong. Let us, first, suppose that the sin of Adam, which brought death into the world, was the first and only cause of that occurrence. This will show that by the inductive method we cannot find the cause of death by examining the earth. We should expect to see some proofs by which all the genera and species which are entombed in the earth, might be identified in some unmistakeable manner with those now living. This it is important to show, because, if only an individual is found now in our seas,

or in any other position on the earth, and that individual may be identified with living species, and we find in the supposed oldest formation which geology has assigned, a similar individual, or species, or family to which it is undoubtedly allied with the living creation, this at once shows that when this oldest formation took place, its animal contents were deposited at the same time, and *in* those animal contents one being found that is identical with the living creation by such a connection as I have just named, the conclusion follows, that they were both created at the same time, or, in other words, that creation which was at first formed, is the same in type as that which now exists.

The difficulty to prove this is not so great as it would appear. The circumstance of finding many species in the supposed older formations of the earth which we do not find now alive, only proves that some of that creation, of which man formed part, has become extinct, and this is very naturally to be inferred from the altered condition of the earth (which marked it) before and after the great deluge. A very large portion we know has passed away in that catastrophe, which extinguished so many. There is reason to suppose the extinction of species to have occurred to the greatest extent in marine animals; we are not surprised to find in the strata of the earth many genera and species strictly confined to the ocean are now found buried in the earth within our reach. As a matter of course, when the Deluge came, many of the animals that were destroyed took a position more or less attractive than others, from their having increased so much more between the time of their creation and extinction; for, as a rule, we may determine that the higher the position the animal took in the living creation, the more scarce it was, and the less the number of that animal likely to be found; so that for one higher and warm-blooded animal we should expect, as the natural evidence of such a catastrophe, countless thousands in the earth of the lower animals, such as the Mollusca. On this account we shall take our example from those that are found fossil in greatest abundance.

It cannot, therefore, be a surprise to any one that such a species as *Terebratula*, among these last, should be represented by mountain-masses. Nor would it be at all unaccountable, if not one of these *Terebratulæ* should be found alive at the present time; for we have evidence enough to show that when the Deluge came, many parts of the earth were so much disturbed as to engulf mountain-masses of those creatures that were then living in the seas, so effectually, as that not one living individual may have been preserved; yet this is not to

say that the whole earth was alike so engulfed. The evidence of some districts helps to show that much less fearfully disturbing causes might have occurred there than elsewhere.

I, however, for a long time, thought that that species, the *Terebratula*, as a distinct species (varieties of which, amounting to more than two hundred, occupy a place in almost every stratum which geology has successively marked), was really extinct, till I had four individuals by accident brought to me by an old friend, whose brother, the late Captain J. M. R. Ince, R.N., had dredged them up in the harbour of Port Jackson. It is difficult, at the present time, to bring this fact so clearly before the mind of the general public as that they can understand its merits, as a proof of what is here brought forward. It needs some knowledge of the particular subject to enter into the value of this proof. Thus, *Terebratula* may be asserted to have been long known to exist, not by this term, because there was a slight difference in the hinge which justified its being recognized by a different name; but, nevertheless, so closely related to it that it really becomes a wider argument to show that species and varieties of many shells in a fossil state are closely identified with the living specimens. This convinced me of this fact; viz., that regardless of the small number, I could not avoid coming to this conclusion, that the *Terebratula* as a species was that which formed part of the present creation, and, therefore, the present living creation was in type the same when that destruction came and placed them where they are in the earth, as we find them now. I have chosen this species, because it is found in so many strata of the earth, in some of the supposed oldest. The circumstance, then, of finding a variety of this species of shell now living, proves that the type of the first creation is the same as that now in existence, *modified only by causes which led to an alteration in the earth's surface, and the changes incident to those alterations which took place on its surface*. But this kind of evidence that the same living creation existed, altered and modified to suit the changes effected upon the surface of the earth since that creation was formed, can be afforded by other species.

Thus the *Trigonia*, which, particularly on account of its antiquated appearance, was thought to be extinct as a species, till some years ago they fished up one valve of a variety of this species, called *Trigonia pectinata*. So unexpected a friend received more than ordinary attention; immediately it sold for £20; but, as time passed on, more of this variety were found; and of course, as they became less rare, their value was reduced, a fate that sometimes awaits the very highest genus.

It is sufficient for our purpose, though, to know that, old as the species appeared to be, there was enough of it left to show that the same genus marked the present creation with some of the oldest in the earth; for geologists show that this species, in many varieties, is found in the lower oolite. Now, it is impossible that any one can mistake the hinge of the *Trigonia pectinata* (the part from which the shell is named) for any other; it is unique in appearance; and we have nothing that approaches it nearer than the *Castalia ambigua*, which is a different genus.

The same mysterious circumstance appears to mark the chambered shells, better known to some of us by the title of Ammonite, which is the name which distinguishes some of the varieties. For a long time this was considered to be an extinct species, till the *Spirula Peronii* made its appearance, and then the whole of that large species of animals—of which from nearly the oldest formation, geologically speaking, vast numbers of fossil varieties are taken—was united to the present species, whose characters could not be mistaken. These examples, though only three in number, are as good as a thousand for our purpose.

But I will bring forward another kind of proof to show, that other unmistakable signs still exist in the present living creation, to mark them as the same creation as geologists suppose came into existence before the six days mentioned in Genesis. There are three or four species which belong to the Mollusca, such as the *Voluta*, *Fusus*, *Pyrula*, and *Bulimus*, where we have a departure from the usual course of construction in the shell, which, I believe, cannot be explained, and, what is singular to notice, it is confined to these varieties. This alteration is no other than a complete perversion of the natural aperture of the shell, so that, while thousands of species of univalve shells have the aperture invariably to the right, these four varieties have it turned to the left.

Remarkable as this circumstance is in itself, it is of singular importance that it should be noticed here, for the very same peculiarity is to be observed in the fossil varieties of the same species, with the exception of *Bulimus*, which is not found in a fossil state. When we find peculiarities which mark the living and extinct parts of the creation with such a very close identity as this, I think we may say there is no higher proof that the time which marked the commencement of one part of creation still existing, was the time that marked the commencement of that part that has become extinct.

Having thus proved that the identity of the living and extinct animals have too close an analogy to admit of their

forming two distinct acts of creation, let us now try to prove, in the second place, the impossibility of making two creations out of what we possess; for if death must have attacked both, we must either suppose that there were two different causes for death, or else we must suppose that the same cause affected both. Now, if we analyze this, we find that we shall get no nearer to the point at issue, by multiplying creations. By the inductive method, it will be at once seen that we cannot prove what was the cause of death any better by multiplying or separating the six days' creation, and so trying to show that they were separate acts.

If we look into the earth, we shall at once see we have no connecting point to lead us to suppose that death proceeded from the sin of Adam, any more because we suppose that there were more creations than one. It was not making the arguments of geologists stronger, or nearer the inductive proof (which is the only proof they have any right to handle), to say there were successive creations.

When we know that natural philosophers have not hesitated to place somewhere in the present *classification* of animals, as far as our present knowledge goes, a variety or an individual, which we find in a fossil state, and which has not been found alive, we have a sufficient proof that naturalists do not discover in those animals that are extinct, such signs of separation as to justify the idea that therefore they are a different creation; although we cannot, with all the additions which geology makes to the creation now in existence, put together any other than a disjointed and imperfect creation.

Why we should be required under such circumstances to make two or three separate creations, when we cannot perfect the one that has been broken, seems to me, not only to be a gratuitous, but a marvellous act. For though we have so many animals in a fossil state, yet we could not possibly affirm that they give us any good reason for believing that they formed a different creation. As far as they go, they all lock into the creation now in existence. And we say this very advisedly, for most of us know how very little beyond the mere outside of the creation now in existence we are able to reach. Even those who make investigations of comparative anatomy their daily study, know little, comparatively speaking, of by far the larger part of the inhabitants of the ocean. Until Professor Owen showed up the anatomy of the *Nautilus Pompilius*, no one seems to have had an opportunity of examining this animal since the time of Aristotle.

To show that there were more creations than one, geologists

tried to prove that when the first animals died, man was not upon the earth. But this supposed fact, often attempted to be proved, has never advanced so far as to give satisfaction to geologists alone, and if tried by the light of Revelation, it is entirely subverted. We have the bones of man that have been found in the caves of the oldest formations in which geologists find the remains of creatures that must have had life, mixed up with the bones of extinct animals, carnivora of so devouring a character, that it would be impossible he could have long continued a denizen of the earth, had he not been destroyed in the Deluge, and certainly it is impossible that man could have spread over the earth at the same time that they existed.

But one perfect creation is announced in Scripture. This, I think, geology cannot disprove, however men may differ in the questions without the aid of Revelation, how or when those parts of that creation became extinct, or how, or when, it became necessary to develop by some laws inherent in the particular animal, other parts of the same creation adapted to a later period. For this creation, which was pronounced so perfect, very soon came partly to destruction, and that from a cause which no one could have discovered simply by exploring the interior of the earth.

Revelation was, therefore, at once needed to tell us that that cause was man's sin and fall, and that death was denounced upon every living creature then in existence, on account of his sin. So that, after this statement in the sacred narrative, we are prepared for the still more awful and direful description of the universal destruction of every living thing by water, wherein was the breath of life, except those which were appointed to be preserved. And this catastrophe took place, as you all know, at the Deluge. At this event, a large portion of those animals which, in their original formation, when blended with the rest, formed one perfect and unbroken chain or circle, was entirely swept away from the face of the earth. They therefore became extinct. The varied forms and habits of these now extinct races, having been adapted to the state of the earth before the Deluge, rendered it necessary that at that catastrophe some of the animals should be exterminated. The food having been changed on which animals were to subsist, made it indispensable that several of the larger flesh-eating animals should be extinguished as well as those species they fed on. This appears to be very naturally accounted for, if, as we find was the case, man was to occupy a wider surface upon the earth after this event.

I wish here to allude to a circumstance which has doubtless

puzzled many a mind that may not have been disposed to regard the truths of Revelation with any disposition to doubt. We have been told unmistakably there that the cause of death was man's sin; and it is clear that an indispensable condition, as well as the justice, of this belief was, that no interruption should have completely severed the race of Adam from the living man that occupied the earth after the Deluge.

Accordingly, we find in the Mosaic account of the diluvial destruction, there is a means furnished, which at once inseparably connects the whole race of man, from the time of the fall to the present day.

I want here to correct an error which many believers have fallen into in company with geologists, and which calls for some of that charity which, I have before said, is especially required in all those who attempt to combat a vexed question like that before us.

This difficulty appears to have arisen out of a circumstance which believers may not have suspected to exist. It is connected with the construction and position of the words in the original Hebrew, which first announce the Deluge. It is there first expressed in these words: "Of every living thing of all flesh, pairs of every sort shalt thou bring into the ark, to keep them alive with thee." Now it is to be observed that this command, "every living thing," seems to be an universal expression. Accordingly, without any knowledge of this fact, that in the Hebrew, as well as in other languages, it is not at all uncommon to announce the fact of a subject in general or universal terms, but that afterwards, in continuing the subject, as it becomes more special, those terms are qualified by the context. This is the case in the instance before us; for in the next chapter we find, as the particulars become more minutely stated, that the clean and the unclean animals are now distinguished; so that we find seven, and not two, formed the numbers of some of the animals that were taken into the ark. The clean and the unclean beasts, being all that were named. This is important to be noticed, because, by correcting it, we shall remove the doubts of many over the popular idea, that the Scripture warrants the inference that two of every sort of all living flesh was commanded to be brought into the ark. And it is so important that we should be correct upon this point, that I shall not apologize for adding in this place the Scripture authority, which makes it certain that the word "all" is not used in an universal sense in many parts of Scripture, and that it is customary there to use universal terms with limited significations. This fact is well known to

many divines. Thus, we find the word used in 1 Cor. xiii. cannot be used but in a limited sense.

Our Lord himself said: "All things which I have heard of my Father, I have made known unto you." Here it is evident that the term is not to be understood universally, but restrictively. So, in the vision of St. Peter, he beheld "a certain vessel wherein were all manner of four-footed beasts of the earth, and wild beasts and creeping things, and fowls of the air." It is not necessary to suppose that the animals here were, zoologically and numerically, all the living creation, but only a variety sufficiently great for the selection that Peter was called upon to make. Besides, Peter afterwards qualifies it in chap. xi. 6, in which the word "*all*" is left out altogether. "I considered," he says, "and saw fourfooted beasts of the earth, and wild beasts, and creeping things, and fowls of the air." We have another example where an universal term could not have any other than a limited sense. Obadiah says to Elijah, "As the Lord thy God liveth, there is no nation or kingdom whither my lord hath not sent to seek thee."

But there is no instance we could mention, perhaps, which bears so closely upon our present subject, while it will, I hope, help to make it more definite and clear, as the word *day*, which, whether in its wider or more limited sense, is so differently rendered in different places, as thereby to lead to the most painful doubts. If geologists had always borne in mind *this fact*, that whenever the word day was limited in its sense, to mean only twenty-four hours, that limitation is always borne out by the context,—the words evening and morning, or some like expression, being invariably added,—they would have been unmistakably sure, that in rendering the six days of creation in Genesis i. the words evening and morning take it quite out of our power to attach the more lengthened period to the word *day* in this place.

The words of Scripture do not oblige us to understand that every variety of living creature at the time of the Deluge was necessarily taken by Noah into the ark, though all flesh wherein was the breath of life at that time perished. And if it were possible for such a thing to have taken place, we should actually have attributed to God an unnecessary act. For, while there was an unerring design in not breaking the moral chain which was to link the existing *man* with the old *Adam*, there could be no such necessity for linking the *brute* creation—those animals which were unable to see the cause which brought their existence to an end.

It seems, therefore, that the idea of taking animals into the

ark for any other purpose than the accommodation of man, and to preserve seed alive for his comfort, places a gratuitous restraint upon our creed, and causes many to believe that those things which really are stated for our belief have a meaning attached to them which Scripture does not warrant.

The introduction of the ark in the position that it takes in the Mosaic account justifies us in saying that, while it was only there for man's accommodation and comfort, without which he could not have existed or continued on the earth, it brings him inseparably and morally in contact with those parents that first brought him into existence upon the earth, and identifies him immediately with the punishment that had been denounced upon his progenitors; thereby showing the imperative necessity there is for man's believing that the sin of Adam was the only cause which led to the death of any creature, and that, therefore, without this cause, there would have been no death. The ark, therefore, placed where it is in the Mosaic account, not only shows the justice and consistency of God in uniting in this way by blood relationship the antediluvial with the post-diluvial man, but it still further verifies the truth of the Scriptures, that for man's sin, and for no other cause, death first came into the world, at the time stated by the Prophet.

The CHAIRMAN.—It is my pleasing duty to ask you to tender your most grateful thanks to Dr. Burnett for the admirable paper just read, which has lost none of its force from the manner in which it has been read by Mr. Montagu Burnett. I feel that this paper is one which requires attentive study. Though it may appear contrary to the popular views of geology, I believe it to be most accordant with the recent progress of that science. I venture to characterize it as a far-sighted paper,—one which could only have been written by a person thoroughly conversant with geological progress, while it is penetrated by a profound reverence for revealed truth. Dr. Burnett has not shrunk from any of the difficulties of the question. He has shown that geology has made no discoveries inconsistent with Revelation, while he has also shown that it has not yet developed itself into a perfect science. The popular theory among geologists a few years since—a theory retained in many modern text-books—was to ascribe the fossil remains of certain strata to different successive creations; the plants and animals of one creation being destroyed by some cataclysm before those of the succeeding creation made their appearance. This theory is now for the most part abandoned as inconsistent with the facts accumulated within the last few years. The tendency is to abandon it altogether, and to admit one creation only. It is true that some would spread this creation over a large period, and that most still require millions or billions of years for the formation of

the various strata of the earth yet explored. When we ask, however, for demonstrative proof that these strata could not have been formed in any shorter space of time, we are met, not with proof, but the mere assertion that they cannot be conceived to have been formed in a lesser space of time. When instead of mere assertion, we find attempted proof, from the rate of the deposition of mud in deltas, the gradual upheaval of strata in certain periods of time, the formation of coral reefs, &c., we find the assumed data of calculation altogether upset by other data obtained from a more careful survey of the phenomena relied upon. Dr. Burnett treats the subject from another point of view; from a wide range of induction, he argues, from the unity of plan, anatomically and physiologically considered, of all the fossil remains of the earth yet discovered, for one, not many successive creations. Natural history has only been studied with anything like scientific accuracy for less than a couple of centuries; yet within that time we know races of animals have become extinct. One picture and a few bones in the British Museum and Oxford, are all that we now possess as records of the Dodo. We cannot therefore argue, that because an animal has become extinct, it belongs to a former creation. Only some two specimens of the encrinite, so abundant in fossil strata, have yet been dredged from the bottom of the sea, yet there may be zones of animal life, in which it may still exist in great abundance, in the vast unexplored beds of the ocean. I do not think that geologists need complain if we call their science an imperfect one. It is yet in its infancy. The first meeting of the British Association gave a gold medal to William Smith, the father of English geology,—so called, because he first pointed out the identification of strata, not by their mineralogical character, but by their fossil remains. Hasty generalization and reasoning on the contents of these strata led to the successive-creation theory, a theory opposed entirely to the analogy of the present distribution of creatures on the earth. As an example: had Australia been submerged, and its present fauna been embedded in sand, clay, or calcareous matter, and then raised again, that fauna would certainly a few years since have been classed as a fauna of great geological antiquity. Geology, as a science, is one of the most difficult and intricate man has undertaken to explore. We need not be surprised if its progress be slow. The presumed great and vast antiquity of its many strata has not been proved; the progress of facts tends rather to disprove it. In this, geology seems to be passing through the same phase which other sciences have done. We hear little now of the vast antiquity of Chinese civilization, though some would still maintain a fabulous antiquity for ancient Egyptian civilization. We may doubt, with Sir G. Lewis, whether much real progress has been made in deciphering Egyptian hieroglyphics; but analogy with the ideographic writing of the Chinese would lead us to suppose that foreign names at least were represented by phonetic characters. In this we may credit hieroglyphists, when they decipher the names of foreign rulers of Egypt. Judged in this manner, the vaunted antiquity of the Zodiac of Denderah, assumed from astronomical considerations, collapsed into that of comparatively modern times, by the discovery of its dedication to a

Roman emperor. I am sure you will not feel less indebted to Dr. Burnett for the great mass of information he has given us in his paper, than gratified by the noble love of truth which pervades it from beginning to end. (Hear, hear.)

Captain FISHBOURNE.—I was very much struck by the observations which Dr. Burnett has made with respect to the disorganization of the human mind which had resulted from the fall of Adam. Those who disputed the truth of the events related in the Bible, ignore the fact that something had taken place with respect to the mind of man which constantly caused him to run contrary to his whole reason. How was this accounted for? The opposition of science to revelation appeared to him to proceed in a great measure from ignorance on the part of those who raised the objections—ignorance of science and ignorance of Scripture. An instance of that was afforded in the objection to the passage in the Bible with regard to the serpent. Here was a very complex question, a very difficult passage; and the scientific man putting his own construction upon it, and bringing in his science to his aid, rushed at once to the conclusion that the Scripture was all wrong. He did not descend to the question of exegesis; he read the passage in the sense which he thought proper to put upon it himself, and, without waiting for further inquiry, he pronounced it to be all wrong. He added, that having examined the serpent, he found that it was never adapted for walking; but he had no right to presume that the serpent had walked. There was not a word in the text about its having been previously erect. But he assumed too much, and he failed to give any proof in support of his assumption. It would be necessary for him first to prove that there was a pre-Adamite serpent; secondly, that the interpretation which he put upon the passage in the Scripture was the correct one; and thirdly, that the curse pronounced by God had reference to the serpent, and not to the devil. But instead of doing that, what did the scientific man do? Why, he simply told them he had examined the physical organs of the serpent, and found that serpents never walked. He might as well have examined the dumb ass of Balaam, and told them it did not speak. (Hear.) He passed entirely out of his province when he entered into these questions;—he was not in a position to deal with them. They were things supernatural, which he could not investigate. With a miracle once granted, they could afford to make the man of science a present of all such arguments. (Hear, hear.) Now, it was only necessary to observe the effect which Christianity produced on those who practised its teachings, in order to be convinced of its truth. With such demonstrative evidence in favour of the Scriptures, I think we have very good grounds for not accepting the deductions of simple reason, when we find them in opposition to the doctrines taught by the Bible. But what was the position which men of science took up with regard to this question? They said, "Oh, you have so many different forms of belief. When you are as much agreed on the subject of religion as we are with regard to science, we will be prepared to listen to you." This was the most monstrous assertion I ever heard in my life. What is the act? Let us take, for instance, the Apostles' Creed: Christians of all ages,

and of nearly every denomination, had agreed to that ; and I ask those who taunted them with their disagreement, to produce so many articles of scientific faith, which they would all adopt (hear), or which they had ever adopted, for one century. (Hear, hear.) Nay, I challenge men of science to produce such a confession of faith in the truths of science, as is contained in the Apostles' Creed, upon which they were agreed at the present moment, or upon which they had agreed even for the last ten years. (Hear, hear.) When they have done that, it would be time enough to taunt Christians with their differences of opinion on matters of faith. (Hear, hear.)

Mr. Ince.—It was not my intention to take any part in the discussion ; but I desire to mention a remarkable circumstance which, perhaps, no one else in the room is aware of, and that is, that within the last few days some twenty specimens of terebratulæ have been found in this country, off Skye. On the previous Friday night I had the pleasure of examining one, and when I took it into my hand it was still alive, though just dying. I think it important to mention this fact as bearing out the arguments of Dr. Burnett, to whom our best thanks are due for the very valuable paper he has contributed.

Mr. Warington.—In the few remarks which I shall make upon the paper, I shall occupy as little time as possible. It struck me that the paper was one which, if any sceptic had been present, would have afforded him an opportunity for very severe criticism. It appears to me that there is one radical fault in Dr. Burnett's argument, and a very radical fault it is. The absence of Dr. Burnett would make one loath to speak of it in a critical manner ; but it seems to me as if he had overlooked what the true mode of reasoning is by which any science obtains its conclusions. He admits that scientific induction in geology is just and right up to a certain point ; but he argues that it is presumptuous to go one step further. He admitted that geology was right in saying that the remains of veritable animals had been found in the earth, which animals certainly died ; but he contended that it was presumption on the part of geologists to say that those animals died before Adam was created. But the kind of reasoning by which geologists arrived at the one fact was precisely identical in principle with the kind of reasoning by which they arrived at the other. The difference was merely in degree. How was it, when a bone was discovered in the earth, that they were able to say that it was the bone of an animal? Was it possible to give mathematical proof of it? It was certainly impossible ; no one could tell whether it was the bone of an animal or not, except by analogy. They were enabled to recognize it as a bone, from its resemblance in form to the bones of animals with which they were acquainted ; but that was all the proof that could be given, and they had no other grounds for arriving at the conclusion that it was a bone. It was quite possible that there might be such a structure unconnected with a living animal, and that there might be such a form unconnected with life ; but inasmuch as no human being had ever known of such a thing, it was taken as proof that the structure was a bone, and that the bone was the bone of a living animal which had died. It was a proof which rested solely

upon analogy; and while Dr. Burnett admitted that the geologists were right in their reasoning so far, he asserted that they were not justified in further assuming, upon the same evidence, that those animals existed at a very remote period. But what was the evidence upon which geologists based their conclusions? They found a bone incased in a certain rock, and they asked themselves the question how it had become incased there. I will take, for instance, the case of a bone found imbedded in sandstone. How did it get there? the geologist asked. It could not be supposed that it was purposely buried there. It was therefore very plain that the animal must have died in that position, and that the rock must have accumulated round it in process of time. The animal must have died amongst loose sand, and the sand having accumulated round it, gradually became hard, until it formed sandstone. This was the kind of reasoning adopted by geologists. I am not going to say that the conclusion is right or wrong. But it is a mode of reasoning which is entirely based upon analogy; and until the facts were otherwise accounted for, geologists had clearly as much right to assume that the bone had been in the rock for a long period, as they had in the first instance to assume that it was a bone at all. Therefore it strikes me that the argument of Dr. Burnett was open to objection on this ground. It appears to me that if the reasoning of geologists was just in the first instance, it was no presumption on their part to take the further step, unless it could be shown that the evidence upon which they based their conclusions was insufficient. I will take the case which has been instanced by Dr. Burnett himself,—the case of the flint pebbles. It is found that pebbles are round, and geologists conclude that they are made round by the action of running water. Here, again, they were reasoning from analogy; for they found that pebbles exposed to the action of water are made round, and they had therefore concluded that round pebbles must have been at some time or other exposed to the action of such water. And they further asserted that if pebbles had been made round by the action of water, the process must have occupied so much time. I think this is a very fair assumption, and until those who hold a different opinion are able to disprove it by facts, they have no right to complain of the views advanced by geologists. I am not going to say that geologists are right or wrong, but I certainly think that Dr. Burnett had found fault with them unjustly; because they were not making hypotheses, but were reasoning from facts, as far as they knew them. What they want, if they were wrong, is more facts to set them right. Until those facts were adduced, it was useless to argue that geologists had no grounds for the conclusions which they arrived at. I have only one more observation to make. I think it is rather a grave assumption on the part of Dr. Burnett to say that there was no death in the world before the fall of man. It is contrary to the opinion of a very large proportion of the best scholars of the present day, including those who were most opposed to the innovations of science, and to me it appears to be very dangerous ground to take. I have also a word to add with regard to the remarks which had fallen from one of the speakers who preceded me. I think that Captain Fishbourne

was a little unjust to men of science who objected to the Scriptures, when he stated that they put their own interpretation upon them. To a certain extent that observation may be true; but so far as I know of scientific objectors, they quoted the interpretations which had been received as orthodox, and then proceeded to show that, according to the teaching of science, these could not be true. They do not put an interpretation on the passage themselves, but they take the commonly received interpretations, and endeavour to show that in that sense the Bible is inconsistent with the truths of science, and calculated to mislead. How far they had succeeded is a question into which I am not now prepared to enter; but I think it right that their objections should be fairly stated, in order that they might be fairly met. (Hear, hear.)

Dr. GLADSTONE.—There are one or two things in the paper upon which I should like to make a few observations; but I feel, like Mr. Warington, some delicacy in doing so in the absence of Dr. Burnett. My first objection is to the title of the paper. I cannot see why the subject treated by Dr. Burnett is called "A Comparison between Science and Revelation, as Standards of Truth." I think those two terms are incompatible. The term science is very indefinite; it might mean natural science, or theological science, or metaphysical science, or political science. But when we come to the essay itself, I find it commences very properly with the statement that God created the entire world, and that the evidence of His power and wisdom is to be found in all His works. It is further laid down, that having created the world, God had revealed himself to man, whom He had also created to inhabit that world. Now I can understand a comparison between these two things as standards of truth—a comparison between Nature and Revelation. Both manifest, though in different ways, that God who was their great Author. But I do not understand how science can be regarded as a standard of truth. Science is simply a knowledge acquired by man from what he observes in Nature or Revelation; but the deductions of man, whether in natural or theological science, can in neither the one case nor the other be regarded as standards of truth. I think it should have been more clearly shown in the paper that the science spoken of meant natural science, and that natural science meant the deductions of man from the facts which he observed in Nature. But while the facts of Nature are perfectly true, and while Revelation, coming as it did from God, must also be true, the deductions of man from the facts of Nature might be far indeed from the truth, just as his deductions from the words of Revelation might be very far from being true. (Hear, hear.) I was very much struck with the observations in the paper upon which Capt. Fishbourne had remarked. I do not think there can be any doubt as to the disorganization of man's reason. He is constantly falling into all kinds of errors. It should be borne in mind, too, that this disorganization prevails to a far greater extent in things spiritual than in purely temporal matters. Far greater danger therefore exists of men being led away by false theories with respect to the words of God in Revelation, than by false theories with respect to the facts of nature. I am not going to enter into the theological question; but

I will say that nowhere in Genesis can I find it stated that the death of animals depended upon the fall of man. I remember that this is stated in Milton; but I do not recollect any passage in the Bible itself by which the assumption could be maintained. It contained no reference whatever to the cause of the death of animals. I know very well that theologians are divided upon the point; but I will not go further into that question. I would, however, remark that in my opinion the present existence of the Terebratula has really very little bearing upon the subject under discussion. There are many other arguments for the antiquity of fossiliferous strata to which Dr. Burnett had not alluded. There can be no doubt of the apparent succession of species in rock after rock as they are dug up out of the earth. Attempts had been made by geologists to determine by mathematical calculation the length of time which had elapsed since the animals found in these rocks had died; but the more they applied mathematics to the solution of the problem, the longer the periods became. I cannot sit down without making one further remark. I think that Capt. Fishbourne was rather hard upon men of science when he spoke of them as rejecting Revelation, and as believing less in the Bible than other people. Now, I know a number of scientific men, and I am nearly always amongst them; and, from my experience of them, I do not believe the charge of Capt. Fishbourne is well founded. (Hear, hear.) I do not think science induces a man to believe or disbelieve in Revelation. A man's faith had its origin in far higher teaching. (Hear, hear.) I think it is therefore very unwise to put forth such statements. I do not believe, as a rule, that men of science are opposed to Revelation. If it were a fact that men, by their study of science, were led away from a belief in the Bible, it would be the most cogent argument that could be urged against the truth of Christianity; but I do not believe any such argument can be used. Among men of science there are doubtless individuals who do not believe in revealed truth; but it is the same in every other profession on the face of the earth. (Hear, hear.) I am certain that great harm would be done to young minds if the statement that science was opposed to Revelation were to go forth, and I feel it to be my duty to correct it. (Hear, hear.)

Rev. J. B. Owen.—However we may differ with respect to the views contained in the paper, we shall all agree to the vote of thanks which has been proposed to the author. (Hear, hear.) I think our thanks are also due to those gentlemen who have spoken upon the paper, for the observations which they have made. I fully concur in the remarks which have been made by Dr. Gladstone with respect to some apparent deficiencies in the line of argument pursued by Dr. Burnett, and it occurs to me, that if Dr. Gladstone would favour us with a paper remedying the defects which he has pointed out, he would confer a very valuable service upon the Society. (Hear, hear.) I am sure that a paper on this subject from one whose deep scientific research is only equalled by the soundness of his religious views, and the catholicity of his sentiments, would be listened to with very great interest (hear, hear); and, with Dr. Burnett on the one hand and Dr. Gladstone on the

other, I think we might be assured that, between two such able and intelligent witnesses, every word of the truth would be established. (Hear, hear.) Notwithstanding any minor defects, I think the paper a very admirable one. This is an age in which a vast amount of attention is given to geology. A great deal more attention was now paid to the earth, than to the heavens. In former times astronomy was the science which chiefly attracted man's attention, and we all know the series of blunders they had fallen into with respect to it till the time of Copernicus; and that it is the scientific glory of England to have produced the system of Sir Isaac Newton. It now appears that astronomy is given up in favour of geology. But it strikes me that we have not reached that position in respect of geology which we have attained in astronomy. Geology wants its Newton. We want some great mind, who, by a careful investigation of the crust of the earth, will arrive at a series of definite conclusions upon which he could base a true system. With respect to other remarks, I will only say that, in my opinion, it is of the utmost importance that, in a society like ours, we should have all sorts of relevant observations. (Hear, hear.) The only things which should be excluded from our discussion are noise, and nonsense, and abuse. As long as what is stated is expressed civilly, and has any scientific basis to support it, there should be no objection to it. We profess to stand upon a foundation which, like the kingdom of the Redeemer, can not be shaken, and therefore we can afford to listen to all kinds of suggestions, and discuss them as the Lord Jesus did constantly, while on earth, in a calm and temperate spirit. The more we imitate His example in this Society, the more we shall show ourselves consistent disciples and sincere believers in the grand truths which He came on earth to proclaim,—namely, the truths which God had revealed to man, and which it is our object in this Society to defend. (Hear, hear.) I think we shall be able to maintain our position against attacks of every kind. And I can far easier believe that there is no God, than believe that a God existed and never revealed himself. I do not understand how any one could believe in God, and deny that He had revealed Himself to the creatures whom He had made. It is quite as monstrous an hypothesis as to suppose that the father of a family loving his children would never reveal himself to them in his paternal relations. It is such a hypothesis as could not stand for a moment. It is absurd. It is our belief that the Bible is His revelation, and though we may not be able always to reconcile the statements which it contains with certain phenomena in Nature, it is our duty to wait and study, and not take for granted that they never can be reconciled. The institution of such a society as this is worthy of London, the great metropolis of Christendom. Let us only have a few more papers such as that read this evening, and a few more discussions such as have followed, and I am satisfied that a great deal of good will be done. We should be very glad on all occasions to hear the opinions of men who do not agree with us. We would perhaps be able to lead them gradually to our way of thinking; but I hope, at all events, that no one who listens to our

discussions will ever be allowed an opportunity of saying that they were not pervaded by the spirit of charity, and of true Christian gentlemen, which was the spirit of the Lord Jesus Christ himself. (Hear.)

Mr. REDDIE.—Had it not been now so late, I should have ventured to make a few remarks upon Dr. Burnett's paper. But at this hour I feel I must confine my observations to answering some of the criticisms of former speakers. I must first notice the remarks of Dr. Gladstone, who has rather taken Captain Fishbourne to task, as if he had invented the cry that science is opposed to Scripture. I would beg Dr. Gladstone to recall to mind the very history and origin of this Society. It is surely notorious that an alleged contradiction between science and Scripture had been publicly put forward and thrown at Christians, which had made it necessary that they should defend themselves. This charge was certainly raised by our opponents, more especially of late in the *Essays and Reviews;* and it had been publicly repeated since by Dr. Temple, Dr. Colenso, and others. It may be said that these writers are not men of science, which we may admit; but the arguments which they have advanced second-hand are based upon the opinions of certain reputed men of science. I do not, however, for a moment mean to say either that science, or that all men of science, are opposed to Revelation. The very institution of this Society is in itself a protest against any such notion. And when my friend Captain Fishbourne or I have alluded to "men of science" as opposed to the Scriptures, we do not of course mean *all* men of science. We do not, for instance, include Dr. Gladstone himself, any more than we would include our most worthy and thoroughly scientific Chairman. I think we ought all to feel much indebted to Dr. Burnett for his paper. I hope, with the Rev. Mr. Owen, that it will give rise to at least one paper from Dr. Gladstone himself, and to a great many others. (Hear.) With reference to Mr. Warington's criticisms, I think he has made a mistake as regards Dr. Burnett's arguments, which bear upon the difference *in scope* between Scripture and science. Dr. Gladstone has also fallen into the same mistake; for in quoting, in order to criticise, the title of the paper, he overlooked the words "in scope," which form the real key-note to its meaning. Dr. Burnett argued, for instance, that Scripture professed to reveal the cause of death coming into the world, while science and observation could only possibly discover the fact of death, but could not ever get at its cause. That is certainly true, whether we regard it as of much consequence or not. But I am inclined to agree with our Chairman, that this argument is worthy of deep consideration, with all that flows from it. When Dr. Burnett, however, comes to what we call scientific proofs, he does not object to them in principle, as appears to have been supposed by Mr. Warington. He admits the method, but he does not admit particular proofs in certain cases to be satisfactory. Take, for instance, Mr. Warington's argument as regards the so-called rolled pebbles and their assumed great age—

The CHAIRMAN.—I think there is some misapprehension with regard to Dr. Burnett's allusion to flint pebbles. It is hardly fair, perhaps, to criticise very severely a mere illustration. A very faulty illustration may be

taken without at all weakening the force of the argument it has been chosen to illustrate. Flint pebbles are very much softer when dug out of the chalk than they afterwards become when exposed to the sun and air. Even in their hardest condition, a few days' rolling by a stream, or by the action of waves in contact with each other, is all that is required to give them a rounded form and water-worn appearance.

Mr. REDDIE.—I had only a few observations to offer with regard to Mr. Warington's argument as to the pebbles, and they were rather in support of Dr. Burnett's conclusions. I venture to deny that there is proof that round pebbles are always "rolled," as has been too generally assumed. I find in gravel a vast number, perhaps a majority, of pebbles that have been originally formed in a round shape, with a centre or nucleus, and layers, as it were, all round, like miniature strata. Some pebbles, no doubt, have had their corners rubbed off by rolling; but others, and perhaps most of them, have as evidently been originally crystallized and formed in the round form in which they are found. Then it has been said by Mr. Warington that the presence of a bone, or other animal remains, found embedded in strata, proves that death must have existed for ages in the world—

Mr. WARINGTON.—I wish to state that I have expressed no opinion as to whether the conclusions arrived at by geologists are just or unjust. I have simply referred to the kind of argument used by geological sceptics to support their conclusions.

The CHAIRMAN.—So far as I understood Mr. Warington, he did not adopt the arguments which he used. He had simply stated that the sceptic, if he had been present, might have argued that way.

Mr. REDDIE.—It appears to me that it is of no consequence whether the arguments advanced by Mr. Warington are adopted by him or not. Having been advanced by him in discussion, whether as his own or as those of an imaginary sceptic, I think they ought to be answered. When a theory is brought forward by geologists, from which certain deductions are drawn contrary to the teaching of Revelation, we are not only entitled, but bound to examine the evidence by which it is supported. Now what proof do geologists give of the antiquity of the sedimentary rocks? The arguments formerly used in support of the long periods which must have elapsed from the creation have recently been changed. Dr. Burnett has presented us with some new facts and arguments against the theory of distinct creations; but in Sir Charles Lyell's latest work on the *Antiquity of Man*, he had not attempted to maintain them, or rather he had plainly given them up. And now I have in my hand an extract from an able review of Sir William Logan's *Geological Survey of Canada*, which appeared in *The Times* of the 21st of October, 1864, in which the reviewer observes, with special reference to those assumed immense geological periods, as to which Mr. Warington—or his "sceptic"—are so positive, that, "in order to expose the fallacy of such an argument, it would only be necessary to appeal to a few of those Canadian geological monuments, *the true interpretation of which, we believe, will establish the fact*

that the element of time has very little share in the alteration and crystallization of the sedimentary rocks." (Hear, hear.) I quote this to show that (as our Chairman has said) the tendency of the latest scientific conclusions is to reverse not only the theory of distinct creations, but also that of the long geological periods which Dr. Gladstone and Mr. Warington have both so confidently appealed to. But these are questions we shall have to investigate. We are yet but a young society, and perhaps we have all been too eager to dispose of such large questions off-hand, in the course of the two discussions which as yet are all we have had. I, for one, do not admit that these long periods and the great antiquity of the sedimentary rocks have been proved. Dr. Burnett has furnished us with some fresh matter for consideration ;* but his paper must not be considered as having even attempted to settle so large a question. It is to be hoped that it will lead to other papers, in which the various points raised by him will be more minutely discussed. It was, in fact, with that object that these introductory papers had been written and read as a commencement of our Transactions.

The Rev. Dr. IRONS.—While there are some things in the paper to which we might demur, I feel that Dr. Burnett is not the less entitled to our most cordial thanks. I should like to know whether it is probable that the paper will come on for discussion at another meeting. I think it would be desirable that an opportunity should be given us to discuss it at some future time, after we have read and weighed its contents. And I think that nothing is more essential to the character of the Institute as a philosophical Society, than that we should eschew all unnecessary bickering between science and religion. We are here engaged in the pursuit of truth, and our duty is to examine the arguments of those who are opposed to us, and to eliminate as much as possible all merely controversial disputes. (Hear.)

Mr. BURNETT.—I should like to say a few words before the meeting closes, upon the observations which have been made. Of course the paper was intended to meet with criticism. My father would have been very much disappointed if it had not been criticised; and I am glad to find that it has given rise to as much discussion as if he had been present. With respect to the critical objections of Mr. Warington, I have only to say that my father is perfectly aware of the defects of his paper, but his illness had prevented him from producing a more complete essay at present. (Hear, hear.) I beg to thank the meeting for the kind manner in which it has listened to me, and for the cordial vote of thanks which has been passed for my father's paper. (Hear.)

The CHAIRMAN then adjourned the meeting.

* Some of his arguments are similar in character to those so ably put forward in *Omphalos* by our Vice-President, Mr. Gosse. For instance, if we admit creation at all, say of a tree or an animal, it is evident that such tree or animal would *appear* as if it had *slowly grown in time* to be what it is, which appearance would, in the case supposed, be deceptive. This is a difficulty which inductive science must face. Whereas, if men deny creation, they are then involved in greater difficulties of another kind.